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THE ASTRONOMICAL AND CHRONOLOGICAL PURSUITS OF C. P. BROWN

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Brown's changed interest from Telugu literature to Indian astronomy: Charles Philip Brown (1798-1884) is mentioned as the reviver, saviour or resurrector of Telugu and Telugu literature[1], though his counterparts of Tamilnadu were claiming themselves just as students of Tamil in their lifetime and thereafter. While the European interest of the study of Indian astronomy, chronology, calendar system etc., was there since 16th-17th centuries[2], the sudden interest shown by C. P. Brown in the Indian astronomy, chronology, number system etc., during the post-1857 period specifically from 1837, has been curious one. The change of interest by Brown from Telugu literature to Astronomy is noted specifically and significantly, as his collection of manuscripts contained Indian astronomical tables rather than the Telugu ones during the material period. Indeed, the British started rewriting Indian history during this period after the 1857 incidences. Therefore, the astronomical interest of Brown is taken up in this paper for investigation and critical analysis. His works, contemporary writings of others and archival materials have been used for the purpose.

The College established in the St. George Fort to study South Indian languages: The Madras School of Orientalism of Fort St. George in 1812 was started mainly by the British to study the Southern Indian languages, which had reportedly spurred an interest among civil servants on matters of orientalism. Its establishment with F. W. Ellis (1777-1819), A. D. Campbell (1798-1857), Alexander Hamilton, Charles Wilkins and later CP Brown (1794-1884) being important figures associated with it. The College funded research into Indian languages and it was Campbell's works, a Telugu grammar published in 1816 and a Telugu English dictionary in 1821 that first hypothesized the thesis that "*Telugu, Tamil and other South Indian languages were not of Sanskrit origin but belonged to a unique family*". In his preface to the Telugu grammar, Ellis offered substantial evidence on this point. Itonically, Caldwell (1814-1891), who had interacted with CP Brown during his voyage out to India in 1837, was to follow this school of thought[3] though such thesis was put forward much later.

Robert Caldwell and C. P. Brown: When 39 years old man Brown and 23 years youth Caldwell met each other on the board of "Mary Ann" in August 1837 and had to discuss about their work in Madras, only they knew what transpired them to do so. But the critical remarks of Caldwell made about Brown prove that he had some difference of opinion with the later. Ironically, it was claimed that the former learned Sanskrit from the later. Incidentally, before leaving for India, Brown happened to inspect the collection of Leydon at the India Office library, London. John Leydon's visit to India had been shrouded with mystery, though he carried away the valuable manuscripts, coins and copperplates to England during his sojourn to India between 1803 and 1811. "Significant Scots", a website records[4], "*To this pursuit he finally fell a sacrifice, as devoted a martyr in the cause of science, as ever died in that of religion. We are unable to trace his Indian researches and travels with accuracy similar to that with which we have followed those which preceded his departure from Europe, but we are enabled to state the following outlines of his fortune in the East*", referring to a letter that he wrote from the Island of Wales in 1805. Incidentally, the "Copper collection" of Leydon[5] inspired Caldwell to conduct several official and unofficial excavations at Tirunelveli to collect valuable archaeological evidences[6] pertaining to metal objects.

Caldwell's discovery of Dravidians: Ellis, Campell and Vedam[7] could find out that the roots of South Indian languages were different from and independent of Sanskrit in 1816 itself. However, after more than 40 years, Caldwell found that Tamil was the most cultivated and a much older language than was thought as it could stand alone and flourish without its Sanskrit terms. This happened after his meeting of Brown in 1837. Thus, he wanted to give credit to Tamil among the other south Indian languages. Here, it has to be pointed out that the Tamils themselves[8] in their "Sangam literature" or ancient Tamil literature have acknowledged many times at "*many places about the existence of places where many languages were spoken*". That is during the Sangam period itself, many languahges were spoken in the ancient India. The characteristic expression used has been "***pal mozhi theyattoor***" and the geographical boundaries where Tamil was spoken[9], was also recorded as "***between the northern Vengadam and the Southern Kumari, the chaste Tamil was spoken***". Thus, the other languages were sopken north of Vegadam, the present Titupati. However, Caldwell brought the South Indian languages under the "Dravidian" category, thereafter also referred to as the 'South-Indian family of languages'. Caldwell then wrote the 'Comparative Grammar' of the "Dravidian Group" (1856 & revised 1875), which was at the time described as "a revelation" to Indian and Western scholars, as he could invent a "Dravidian race" separately, besides "Dravidian language group". Thus, thus the Church writers claim that all this literary effort had unforeseen effects as it helped to give a linguistic and cultural identity to the lower castes and Tamils in particular which they were quick to get converted to Christianity[10]. It brought thousands into the Christian church giving them access to education, and had grown over the intervening years to raise the status of many lower caste Christians in South India[11]. Thus, the motive had been to convert and divide Indians based on assumed two races "Aryans" and "Dravidians". Coming to Brown, as Caldwell turned from Sanskrit to Tamil, he turned from Telugu to Astronomy and this change took place after 1837. Brown had also expressed such views[12].

The 1837-57 research groups: Not only Caldwell work shows that all these worked together meting and discussing the issues connected with their research, but also their correspondence with each other. He owed his inspiration in the field of comparative philology to his Professor of Greek at Glasgow University, Sir Daniel Sanford. Caldwell's English colleagues "in the immediate vicinity" were, as mentioned, practically of no help to him in his linguistic work. He mentioned the following as his collegues, colloborators and contemporaries, of which he mentioned "19 referees" charateristically, who engaged in their research:

1. George Uglov Pope who had left for Tanjore; and from there he shifted to Ooty and eventually to Bangalore.
2. John Thomas, "appeared too omniscient" and, so, was less approachable
3. Sargent, Caldwell's episcopal counterpart, was a person entirely of different wavelength.
4. Rev. Drew, a first rank European Tamil scholar and an erstwhile contemporary in Madras who was the original "stimulus to Tamil studies" that Caldwell received (by his own admission).
5. Schmid (1837) – Bernard Schmidt friend of Rhenius (1790-1838), worked in Madra, Tirunelveli and other places.
6. Greiner (1844) – Christian Lenhard Greiner worked in Calicut and Mangalore,
7. Weigle (1846) – Gottfried Weigle workrf ion Karnataka just like Brown and Gundert, who concentrated in Kannada,
8. Gundert, the German missionary who first worked in Tirunelveli and who later became the doyen of Malayalam linguistics, was acquainted with him from 1838.
9. Ellis (1816),
10. Brown
11. H. H. Wilson
12. James Princep

13. Monier Williams
14. Max Mueller
15. T. B. Macauly (1800-1859)
16. H. T. Colebrooke (1765-1837)
17. Colin Mackanzie (1754-1821)
18. Charles Wilkins
19. A. D. Campbell
20. Jamres Warren (1769-1830)
21. J. W. Reid

Taking each language, the respective edngaged missionary worked faithfully, as per their agenda and thus, they showed the differences between Sanskrit and non-Sanskritr language. Here, in India, they have been producing dictionaries, grammar and Bibles in each language, but, the evangelization reports were sent to London[13]. Robert Caldwell's typical report[14] has been entitled as "Lectures on the Tinnevelly missions, Descriptive of the Field, the Work and the Results with an introductory lecture onm the Progress of Christianity in India"! As the title itself elaboate and self-explanatory, no interpretation is required. Thus, the working together of different denominations also could be easily noted, though, in other contexts, they appeared to have engaged in fighting and killing each other!

Telugu or Tamil – which is older? The question may appear queer, but such debate was there between Caldwell and Brown. Caldwell while discussing about the antiquity of Telugu, he noted that the earliest writer on Telugu grammar is said to have been a sage called ' Kanva', who lived at the court of Andhra-raya, the king in whose reign Sanscrit was first introduced into the Telugu country, according to the tradition, but his work, if it ever existed, is now lost ; and the oldest extant work on Telugu grammar (which is composed, like all Telugu grammars, in Sanscrit) was written by a Brahman, called Nanniah Bhatta, or Nannappa, who was also the author of the greater part of the Telugu version of the Mahabharata, which is the oldest extant composition of any extent in Telugu[15]. Then came the dating of Nannappa by them, who lived in the reign of Vishnu Vardhana, a king of the Calinga branch of the Chalukya family at Rajamnndry. As Caldwell himself pointed out, "*The reign of this king is placed by Mr. A. D. Campbell about the commencement of the Christian era; but Mr. C. P. Brown, in his cyclic tables, places it, on better authority, in the beginning of the 12th century, A.D*". Thus, it is evident that they had been consciously working taking chronology into their reseach without affecting them. This is similar to what Louis Dominic Swamikannu Pillai[16] did in the case of Tamil literature.

Cyclic tables, troubling chronology, and chronological puzzle: Commenting upon the translation of the Cochin and Travancore inscriptions by the Rev. Dr Hermann Gundert (1814-1893), Caldwell noted that the date of those documents was not certainly known, but is probably not later than the ninth century, A.D., nor earlier than the seventh century. He categorically concluded[17], "*.....for the technical terms of solar-siderial chronology (derived from the Surya-Siddhanta of Arya-bhatta) which are employed in these inscriptions were not generally introduced till the seventh century. The 'sasanas' were written at a time when the the inscriptions belonging to the Mackenzie collection of MSS*". Here, Caldwell's familiarity with Surya Siddhantsa, Aryabhata, etc., can be noted. As for as Gundert is concderned, he worked like Brown in Kerala compiling Malayala dictionary, grammar etc., of course, with interest in astronomy[18]. He collected archieves of information from Tellicherry, where J. W. Reid was working as judge as mentioned below, who later compiled Cyclic tables at Calcutta.

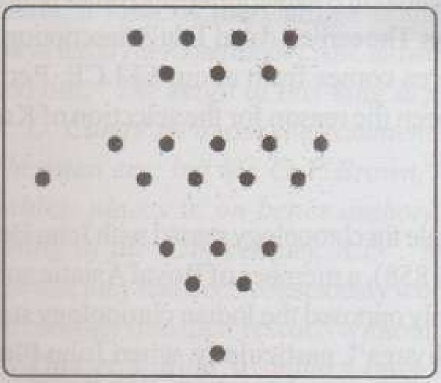
Incidentally, the first inscription that is entirely in Telugu corresponds to the second phase of Telugu history, dated 575 CE, was found in the districts of Kadapa and Kurnool and is attributed to the Renati Cholas, who broke with the prevailing practice of using Prakrit and began writing royal proclamations in the local language. During the next fifty years, Telugu inscriptions appeared in Anantapuram and other neighboring regions. The earliest dated Telugu inscription from coastal area comes from about 633 CE. Perhaps, this has been the reason for the selection of Kadapa by Brown.

The struggle for chronology started with John Bentley (c.1788-1858), a member of Royal Asiatic society, who openly opposed the Indian chronology starting from Kaliyuga[19], particulatly, when John Playfair (1748-1819) declared that the Indian Astronomical Tables starting with Kaliyuga were correct[20]. Thus, he retorted, "*By his [Playfair's] attempt to uphold the antiquity of Hindu books against absolute facts, he thereby supports all those horrid abuses and impositions found in them, under the pretended sanction of antiquity....Nay, his aim goes still deeper; for by the same means he endeavors to overturn the Mosaic account, and sap the very foundation of our religion: for if we are to believe in the antiquity of Hindu books, as he would wish us, then the Mosaic account is all a fable, or fiction*". As even William Jones (1746-1794) was attempting to construct such chronology, but when he found that it was upsetting Mosaic flood, he decided to cut short the Indian chronology[21]. Thus, as script, language and literature were made to struggle with each other racially, the mathemetics, astronomy and sciences were also pitted against each other for colonial supremacy.

The necessity for preparing Ephemeris: After printing the Cyclic tables, Brown engaged a Hindu Astronomer to frame an ephemeris[22] shewing the correspondence dates according to the English, Hindu and Musalman calendars from 1751 until 1850, though his name was not mentioned initially. J. W. Reid (1780?-1870?), the Registrar of Court in Calcutta and sometime judge in Tellicherry, Kerala, had already caused a similar ephemeris obviously with the help of a native astronomer from 1764 to 1835 in Bengal[23]. Here also, the name of the "native astronomer" was not mentioned by the compiler. However, in the "Postscript" of the Brown's book, it has been noted as follows: "*Having now printed Cyclic Tables of Hindu and Mahommedan Chronology, I have caused a Hindu Astronomer, named Vencata Soobramanya Siddhanti[24], son of the late Adisesha Siddhanti, a Hindu Astronomer employed in the College of Madras, to frame the present volume, shewing the monthly and weekly notation for a century beginning in A. D. 1751. The utility of such an Ephemeris to persons in business is obvious. A second volume has been prepared, extending to A. D. 1900*". Thus, it is evident that native astronomers were used entensively to impart the knowledge to the Europeans, implying that the engaged Indian experts knew the European langauges also.

The British / European Indologists though know Hindu method of reckoning, they did not explain: Many times, the European / British Indologists used to accuse that Indians did not have the sense of history and so on. The European search for the origin of human race, arts and sciences resulted in many biased studies against India. Particularly, when the question of time reckoning came, they found that the Indian method had been far superior and it was achieved when no telescope was thought of. Thus, though, they used the Indian method of calendar, even for the "Gregorian calendar", they never wanted to acknowledge the source or give credit to India. As Brown himself confessed[25], "*Some elaborate treatises have appeared in the Encyclopaedia Metropolititana, in Penny Cyclopaedia, in the fifth volume of Lardner's Museum of Science and Art, in Sir Harris Nicholas's chronology of History, and other publications.* ***Every method is explained except that used by the Hindus***". Brown, obviously knowing the fact, pointed out that Warren[26] alone had mastered the subject, who too began his chronology from A.D. 1600 giving titles (names of the year, yuga). Though written in English, understanding required an interpreter. James Prinsep prepared a compendium of it, giving his Useful Tables, published at Calcutta, but like Warren, began at 1600, but he suppressed the titles (names years and cycles), on which the whole system turns[27]. Brown recorded that none of all these books gives any historical occurrences without understanding the significance. Brown went on to point out that though William Jones, Joseph Beschi (1680-1747), H. T. Colebrooke (1765-1837), James Prinsep (1799-1840), James Mill (1773-1836), H. H. Wilson (1786-1860), and other eminent scholars, knew the Hindu method, but had not explained it. Thus, the interesting point to be noted is these contemporary Indologists worked together for a common cause. He also noted the reliability of stone inscriptions while "comparing the dates engraved with that of transcripts, ***for those stones engraven by persons whose interest it was that the truth should be recorded***"[28]. Brown referred to Warren's works at many places.

James Warren (1769-1830) and "Tamil Astronomy": James Warren was the director of Madras observatory. He was surveying in Southern India and as well as studying the astronomical methods used by them. He was surprised about the determination of the eclipses by the native astronomers without any observations, but with calculations carried on with cowry / cowrie shells. As he could not understand the nuances of the theory of probability involved in such cowrie throwing just like dice, he thought that they were doing with blind belief[29]. He described a method followed by the Tamil inhabitants of the Coromandel Coast for the computation of the lunar motion. According to his informants no longer had any idea about the reasons for the single steps which they performed according to their rules. The numbers themselves were not written down but were represented by groups of shells placed on the ground[30]. Thus means 7 zodiacal signs and 19;5,1° [apparently, the "shell" to the far left = 10]. Nevertheless they carried out long computations for the determination of the magnitude, duration, beginning and end of an eclipse with numbers which run into the billions in their integral part and with several sexagesimal ["...based upon the number 60"] places for their fractions[31]. Simultaneously they used memorized tables for the daily motion of the sun and moon involving many thousands of numbers. One begins with the "Devaram" period $D = 248$ days. From this one forms the Calanilam period $C = 11 D + \triangle = 3031$ days.



Later, this idea was picked up others and started using the expression[32], "Tamil Astronomy", as if it was different, but, in fact, it is nothing but Aryabhata's astronomy, perhaps spread from south to north. Even, the astronomical tables subjected to discussion by many European scientists were mentioned as "Tamil astronomical tables", "Tiruvalore tables", and so on[33]. This is just like dividing science on the racial basis, as the western Indologists mentioned even architectural styles racially.

The divide of angilicists and orientalists: This controversy also brings out many details about the involvement of the indologists to manufacture literature. Thus, when Charles Trevelyan, one of the Anglicists was there in Madras during 1859 to 1860 and as Governor 1862 to 1865 as Finance Minister, the other orientalists could have met him. According to Paulins S. Bartholomaeo[34], the Jesuits in Masulipatnam produced "Ezourvedam" in Tamil in order to refute paganism. However, he did not explain how this Tamil manuscript went to French traveller Conte de Modave after passing through a translator in Pondicherry. The Sanskrit text was found together with the French translation by Sir Alexander Johnston (1775-1849) in the Jesuit College in Pondicherry. This particular text was examined by Francis Whyte Ellis who decided that the work was written by Roberto de Nobili[35]. Thus, whether Anglicists and orientalists were working together or otherwise cannot be discerned definitely, as their interests were to rule the heathen gentoos. Thus, when Sir Alexander Johnston, an Orientalist, who had also mastered Tamil, Telugu and Hindustani and had learnt Hindu, Muslim and Buddhist customs had high regard for India and Indians told the British Parliament that India had been governed for two thousand years by the natives and they were as competent as Europeans[36], which was not digested by anglicists. He asserted that Hindus had made the same progress in logic and metaphysics by 1500 BC, possessed laws superior to the Greek, had knowledge of the numerical system and devised astronomical tables of great worth by 3000 BC, which could not be accepted by them at all. In the same way the some "orientalists" denounced [37] Paulinus S. Barthalomaeo (-1806) as a "fraud". The Orientalists were sure that a social change was required in India and that change would come when Indian rediscovered the roots of their civilization[38], whether such change had to be through propaganda or otherwise only was decided by them.

Indigenous, indigenized and imported Indologists: By whatever name, they have been / are called or mentioned, the so-called Surveyors, Colonels, scientists, astronomers, captains, travellers, Jesuits, governors, orientalists, anglicists, etc., had worked together for a common purpose. Here, in the context, they are mentioned as "indologists" for convenience. As British, Scottish, Irish, French, Danish, Dutch, Portuguese, Italian or any other European origin, they might have differed in pursuing their colonial and economic gains, but Christianity bonded them together in taking decision about and against Indian history, historiography, chronology or arts and sciences individually or collectively when crucial questions came up. All contemporary indologists might not have met and worked together as in the cases of Brown, Caldwell, Ellis, Gundert and others as pointed out, but, at Calcutta or London, when they deposed before the Director or the representative of the Queen, they came out with their achievements carried on under unified plot, plan and pogrom, thus, the results expose the implemented ones.

Thus the so-called "Ezourvedam" (The Veda of Jesus) was written in Tamil or Sanskrit, translated into any European language from Tamil or Sanskrit, the fact is that the spurious manuscript was manufactured by the Jesuits in Masulipatnam to refute paganism, heathenism or otherwise known as Hinduism. Incidentally, Brown was here in 1822 and 1830 during his pursuits[39]. And this was going on when the astronomers were observing the transit of Venus in India[40], European scientists were debating about the Indian astronomical tables, Kaliyuga, chronology etc., at one side and conjunction of planets, longitude problem, stellar navigation at the other side, conducting Trignometrical and other surveys, and of course, collectors were collecting revenue, whether famine was not or there.

Surveys and researches were conducted with "economic motive": Mark Wilks noted and shared the official view of any reliable historical information about the nature of landed property[41], as he wrote, "*If it.should be found practicable to trace by a series of* ***authentic documents the history of landed property*** *in the south India, I imagine that no subject of superior interest and importance can be presented to the attention of a British Government*", as was, "*certain that the research would unfold* ***the most useful information on many important points connected with the political economy*** *and good Government of India*" (emphasis added)[42]. The "economic motive" had been mostly treasure hunt and looting of temples and palaces. Thus, we see, when every European left India, he was going with the loads of treasure of jewelry, sculptures, coins, antiques, and other valuables. Once, the economic motive was fulfilled, the natives had to be confused and suppressed and hence the divisive hypotheses and theories were floated. Nicholas B. Dirks, a recent researcher concludes[43], "*As colonial rule in India became more secure, and* ***histories of conquest were rewritten as epics of imperial entitlement,*** *Mackenzie's silence dissolved into silencing of India,* ***the suppression both of the history and historicity of India***".

Colonial multi-disciplinary research, native naïve-colloaboration and scientific stagnation with ideological wars: The European traveller, jesuit, suveyor or any civil servant could carry on research work on multi-disciplinary approach scientifically, while the heathen, idolatrous and naive natives could only supply all inputs to their colonial masters. Thus, they could go on producing literature helping the natives to save their classical languages, protect rich literature, preserve amazing vocabulary etc., however, condemning their culture, tradition, heritage and civilization. Yet, the Gentoos, gentiles, heathens or barabarians should borrow their institutions and abandon their own to prove their civilzed state. This contradicting intellectual manipulations went on and on on and the barbarians could posses only the outdated technology, while wicked priests could still burn widows, useless Gods allow devotees die under wheels of Rathyatra and plunging into sacred waters. What they have / had thrown out was / is taken here as advanced science and technology, while what was / is condemned here was / is taken there for human surrvival, values and peace. Yet, the Indians have learnt the art of killing, attacking and terrorizing each other with verbal and non-verbal terrorism aided and abetted with ideological software, hardware and warfare. Perhaps, it is right time that Indians should decolonize their minds, as the American could still derobe our diplomatic women, while their President could come here dance and sing like the heathens, and the French President's wife pray before heathen Gods for begetting a male-child.

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2. K. V. Ramakrishna Rao, *European Scientists: Indian Chronology and Historiography*, XXth Session of South Indian History Congress held at Tiruvananthapuram from Feb.25-27, 2002, pp.90-96. ...., *The Interest of European Scientists in Indian Chronology and Historiography*, UGC Seminar on Situating Historical Writings in Post-Independence India (Abstracts volume), held at Bharathidasan University on March 23 & 23, 2002, Tiruchirappalli, pp.16-17. ...., for complete details of the paper, see *Indian Calendar and Chronology* (Seminar papers) held at Central Mining Research Institute, Dhanbad on August 9 & 10, 2003, pp.1-20.
3. Y. Vincent Kumaradoss, *Robert Caldwell: A scholar-Missionary in Colonial South India*, ISPCK, New Delhi, 2007,
4. http://www.electricscotland.com/history/other/leyden_john.htm
5. The Copper plates of Rajaraja Cholan were taken away by him and they were / are ironically still mentioned as Leyden plates, Leyden grant and so on.
6. He obtained government permission to excavate, and found the foundations of ancient buildings, sepulchral urns, polished and artistically shaped earthenware vessels, and coins with the Pandya fish emblem. For more details, see David Gore, *Faith and Family in South India*, for more details, see at: http://www.britishempire.co.uk/article/faithandfamily.htm However, the Tirunelveli collection at Chennai Museum did not contain all the artefacts that were depicted in the archaeological reports published.
7. A native Sanskrit scholar, who helped them to learn Sanskrit, read manuscripts and provides information according to their interpretation.

8. Pattuppaattu (Ten tens) and Ettuttogai (Eight Anthologies) are considered as the most extant ancient Tamil literature dated to the period c.500 / 300 BCE to 100 / 300 CE.
9. Panambaranar, one of the commentators of Tolkappiam, has recorded "
10. However, it has to be recorded here that with "Sanars", now known as "Nadars", he had bitter experience, as he described them derogatory manner inviting the wrath of them. Though, the book was reportedly withdrawn in India, it was available in England.
11. David Gore, *Faith and Family in South India: Robert Caldwell and his missionary dynasty*, for more details, see at: http://www.britishempire.co.uk/article/faithandfamily.htm
12. C. P. Brown, *Dictionary English-Telugu*, Asian Educational Services, New Delhi, 1986, p.x of PREFACE. For the question, "Why he compiled the dictionary?" he replied, "This Dictionary was written at the request of the Society for Promoting Christian Knowledge and is printed at their expenses", adding, "The study of English language will, I hope, be a means of opening the minds of Hindus", p.xi.
13. Robert Caldwell, *Christianity explained to a Hindu or Christianity and Hinduism Compared*, The Christian Literature society, Madras, 1893 published under "papers on Indkian Reform"!
14. ………………, *Lectures on the Tinnevelly missions, Descriptive of the Field, the Work and the Results with an introductory lecture on the Progress of Christianity in India*, London, 1857.
15. Robert Caldwell, *A comparative grammar of the Dravidian Languages*, 1856 edition, p.82, can be accessed at: http://www.archive.org/stream/cu31924023009966/cu31924023009966_djvu.txt
16. L. D. Swamikannu Pillai, *An Indian ephemeris, A.D. 700 to A.D. 1799, showing the daily solar and lunar reckoning according to the principal systems current in India, with their English equivalents, also the ending moments of tithis and nakshatras and the years in different eras, A.D., Hijra, Saka, Vikrama, Kaliyuga, Kollam etc., with a perpetual planetary almanac and other auxiliary tables*, Madras, 1922 (AES reprint available). ………………………………, *Indian Chronology (Solar, Lunar and Planetary)*, Asian Educational Services, New Delhi, 2003.
17. Robert Caldwell, *A comparative grammar of the Dravidian Languages*, 1856 edition, p.59, can be accessed at: http://www.archive.org/stream/cu31924023009966/cu31924023009966_djvu.txt
18. Rev. Dr. Hermann Gundert (Stuttgart, 4 February 1814 – 25 April 1893 in Calw, Germany) was a German missionary and scholar, who compiled a Malayalam grammar book, *Malayalabhaasha Vyakaranam* (1859), the first Malayalam-English dictionary (1872), and translated the Bible into Malayalam. He worked primarily at Tellicherry on the Malabar Coast, in Kerala, India. Gundert also contributed to the fields of history, geography and astronomy. The archives of information he collected from Tellicherry are kept in the Tuniberg University, Germany and were collected and compiled by the scholar Dr Skaria Zacharia as *Thalassery Rekhakal*.
19. John Bentley, *A Historical Review of Hindu Astronomy*, London, 1825 (Indian reprint available).
20. John Playfair, *Remarks on the Astronomy of Brahmins*, a paper presented by him at tghe Edinburgh Unibversity on March 2, 1789. ………………………, *Observations on the Trigonometrically Tables of the Brahmins*. Both are available in Science and Technology in 18th Century, compiled by Dr Dharmapal.

21. P. J. Msarshall, *The British Discovery of Hinduism in Eighteenth Century*, Cambridge University Press, UK.
22. C. P. Brown (Compiler), *An ephemeris showing the correspondence dates according to the English, Hindu and Musalman calendars from 1751 until 1850*, The Christian Knowledge Society's Press, Church Street, Vepery, Madras, 1850.
23. Ibid, in the preface dated 20-04-1850.
24. Now, it can be read as "Venkata Subramanya Siddhanti". In fact, the "Siddhanti" connotes a person well versed in "Siddhant" / "Siddhanta", which was mentioned by the Arabs as "Sindhind"!
25. C. P. Brown (Compiler), *Carnatic Chronology*, Bernard Quartich, London, 1863, Preface. I, p.27.
26. John Warren, *Kala Sankalita: A Collection of Memoirs on the various modes according to which the nations of the Southern parts of India divide time*, Madras in 1825.
27. The Indians have been using astronomical reckoning based on asterisms, Solar system / Sun, planets under the "Panchanga" system.
28. C. P. Brown (Compiler), *Carnatic Chronology*, opt.cit, p.V, p.32.
29. Some modern-day mathematician can develop such theory just like dice theory, as the particular number of cowries could give specific number, while throwing.
30. O. Neugebauer, *Tamil Astronomy: A Study in the History of Astronomy in India, Osiris*, Vol. 10, 1952, pp. 252-276.
31. In the division of time in gterms of 60 raises a question as to whether Jupiter cycle was followed by the Indians to have 60-year reckoning along with such 60 notation in seconds and minutes.
32. B. L. van der Waerden, *Tamil Astronomy*, Centaurus, Vol.4, No.3, pp.221-234, 1956.
33. G. J. Toomer, *A Note on Tamil Astronomical Tables*, Centaurus, Vol.9, No.1, pp.11-15, 1963.
34. Ines G. Zupanov, *Orientalist Museum: Roman Misssionary collections and Prints (Eithteenth Century)*, in "From Ancient to Modern", pp.207-235, can be aceessd atr: http://www.ineszupanov.com/publications/Orientalist%20Museum.pdf
35. F. W. Ellis, Asiatic Researches, Vol.14, 1822.
36. Huttmann, *Report of the Proceedings of the First General Meeting of the Subscribers to the Oriental Translation Fund*, 1830, Transactions of the Royal Asiatic Society of Great Britain and Ireland, Volume 2, Issue 02, July 1830 pp xxxix-xl
37. Ines G. Zupanov, *Orientalist Museum: Roman Missionary collections and Prints (Eighteenth Century)*, opt.cit, p.217.
38. Martin Priestman, *Romantic Atheism: Poetry and free thought, 1780-1830*, Cambridge University Press, UK, 1999.
39. The posting and transfer of Government servants have been to facilitate them for the convenience and benefit of them or Government. It could be remunerative or expensive depending upon the condition of such transfers and postings. Thus Brown had worked in Tamilnadu at different places – Kambam (1828), Tiruchirappalli (1829), Kumbakonam (1823), of course, Madras (1838-1846).
40. Guillaume Joseph Hyacinth Jean Baptiste Le Gentil de La Galaisiere (1725-1792) came to Pondicherry in 1768 and built a small observatory there. He alao researched into Arikkamedu ruins and other antiques.
41. Nicholas B. Dirks, *Colonial Histories and Native Informants*, p.304. in Carol Appadurai Breckenridge and Peter van der Veer (Eds.), Orientalism and the postcolonial predicament: perspectives on South Asia, Pennsylvania University Press, 1993, USA.
42. John Wilks, *Historical Sketches of South India*, three volumes (containing the survey of Mackenzie), 1817.
43. Nicholas B. Dirks, *Colonial Histories and Native Informants*, op.cit., p.311.